

# TC-FX211

## SERVICE MANUAL

*US Model  
AEP Model  
UK Model  
E Model  
Australian Model*

TC-FX211 mechanical and electrical specifications are almost same as TC-FX170.

This manual contains only the points which differ from TC-FX170.

Please refer to TC-FX170 service manuals (9-956-365-  
□□) for the information not contained in this manual.

For the Australian model, please refer to the TC-FX170 UK model.

### • DIFFERENT PARTS LIST (MECHANICAL PARTS AND OTHERS)

Ref.No.	DESCRIPTION	MODEL	TC-FX170	TC-FX211	Page of TC-FX170 Service Manual
1	SPRING		3-350-426-01	Not used	
2	KNOB (REC)		3-367-438-12	3-389-516-01	
4	LID ASSY, CASSETTE	X-3362-657-1		A-2004-220-A	
5	PANEL ASSY, FRONT (US) PANEL ASSY, FRONT (EXCEPT US)	X-3362-658-1 A-2003-854-A		A-2004-221-A A-2004-222-A	
7	SCREW, +B(2.6X8) TAPPING	4-928-635-01		4-951-620-01	
8	HEAT SINK	* 3-309-144-21		Not supplied	
14	CORD, POWER (US) CORD, POWER (UK) CORD, POWER (AEP) CORD, POWER (AUS)	▲1-551-628-12 ▲1-551-884-32 ▲1-551-908-11		▲1-558-945-11 ▲1-696-572-11 ▲1-555-750-00 ▲1-696-966-11	17, 18
15	BUSHING (S) (4516), CORD (AEP, UK, AUS)	* 3-703-244-02		* 3-703-244-00	
18	PANEL, BACK (UK) PANEL, BACK (E) PANEL, BACK (AEP) PANEL, BACK (US) PANEL, BACK (AUS)	* 3-367-318-32 * 3-367-318-42 * 3-367-318-22 * 3-367-318-01		* 3-385-652-32 * 3-385-652-43 * 3-385-652-23 * 3-385-652-03 * 3-385-652-51	17, 18, 25
19	SCREW, +BV(2.6X10) TAPPING	4-928-635-21		4-951-620-11	
21	FOOT ASSY (US)	X-4885-950-1		Not used	
23	SPRING	3-356-957-01		Not used	
T401	TRANSFORMER, POWER (AUS)	—		▲1-450-442-21	17, 18, 25
	ACCESSORY & PACKING MATERIAL *****				
	INDIVIDUAL CARTON(US, E, AUS) INDIVIDUAL CARTON(AEP, UK) INSTRUCTION(US) MANUAL, INSTRUCTION(ENGLISH, F, E, RC) (AEP, E) MANUAL, INSTRUCTION(ENGLISH) (US, UK, AUS) MANUAL, INSTRUCTION(D, NL, S, I) (AEP)	* 3-364-604-11 * 3-364-604-11 3-703-450-01 3-752-875-11 3-752-875-21 3-752-875-41		* 3-364-604-61 * 3-364-604-71 Not used 3-756-338-11 3-756-338-21 3-756-338-41	25

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- AUS : Australian
- F : FRENCH
- E : SPANISH
- RC : CHINISE
- D : GERMAN
- NL : DUTCH
- S : SWEDISH
- I : ITALIAN

Note: The components identified by mark ▲ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

STEREO CASSETTE DECK  
**SONY**®



使用時は添付資料も参照のこと  
Refer to the additional documents.

9-957-736-11

Sony Corporation  
Audio Group

English  
93C0567-1  
Printed in Japan  
© 1993. 3

Published by Audio Corporate Planning Group

# TC-FX211

## SONY SERVICE MANUAL

US Model  
AEP Model  
UK Model  
E Model  
Australian Model

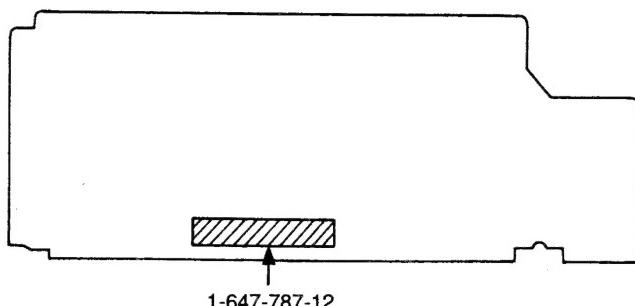
### SUPPLEMENT-1

File this Supplement with the Service Manual.

**Subject : Circuit change**

New type identification :

[AUDIO BOARD] — Conductor side —



9-957-736-81

Sony Corporation  
Consumer A&V Products Company  
Home A&V Products Div.

English  
94G0975-1  
Printed in Japan  
© 1994. 7  
Published by Home A&V Products Div.  
Quality Engineering Dept.

 : indicates changed portion

#### CHANGE PARTS LIST (TC-FX170 Service manual page 22, 23, 25)

Page	Ref. No.	Former	New					
22	C121	—	1-136-439-11	FILM	330PF	5%	630V	
	C221	—	1-136-439-11	FILM	330PF	5%	630V	
23	CT301	1-141-225-00 CAP, TUNING, TRIMAR	—					
25	RV103	—	1-241-767-21	RES, ADJ, CERMET	100K			
	RV203	—	1-241-767-21	RES, ADJ, CERMET	100K			

#### ELECTRICAL ADJUSTMENTS (TC-FX170 Service manual page 5, 6)

##### Record Bias Adjustment

###### Setting :

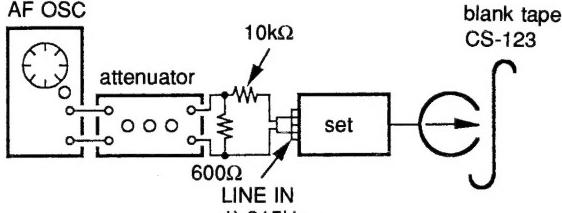
REC LEVEL control : standard record

###### Adjustment Location : Audio Board

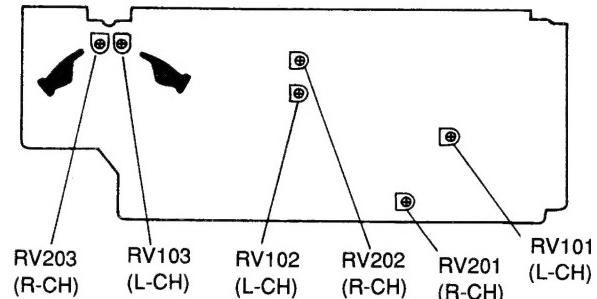
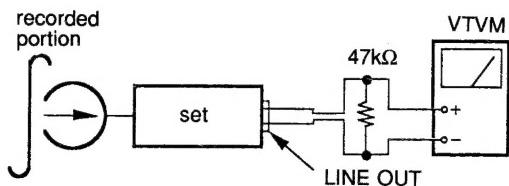
— Conductor side —

###### Procedure :

- Mode : record



- Mode : playback

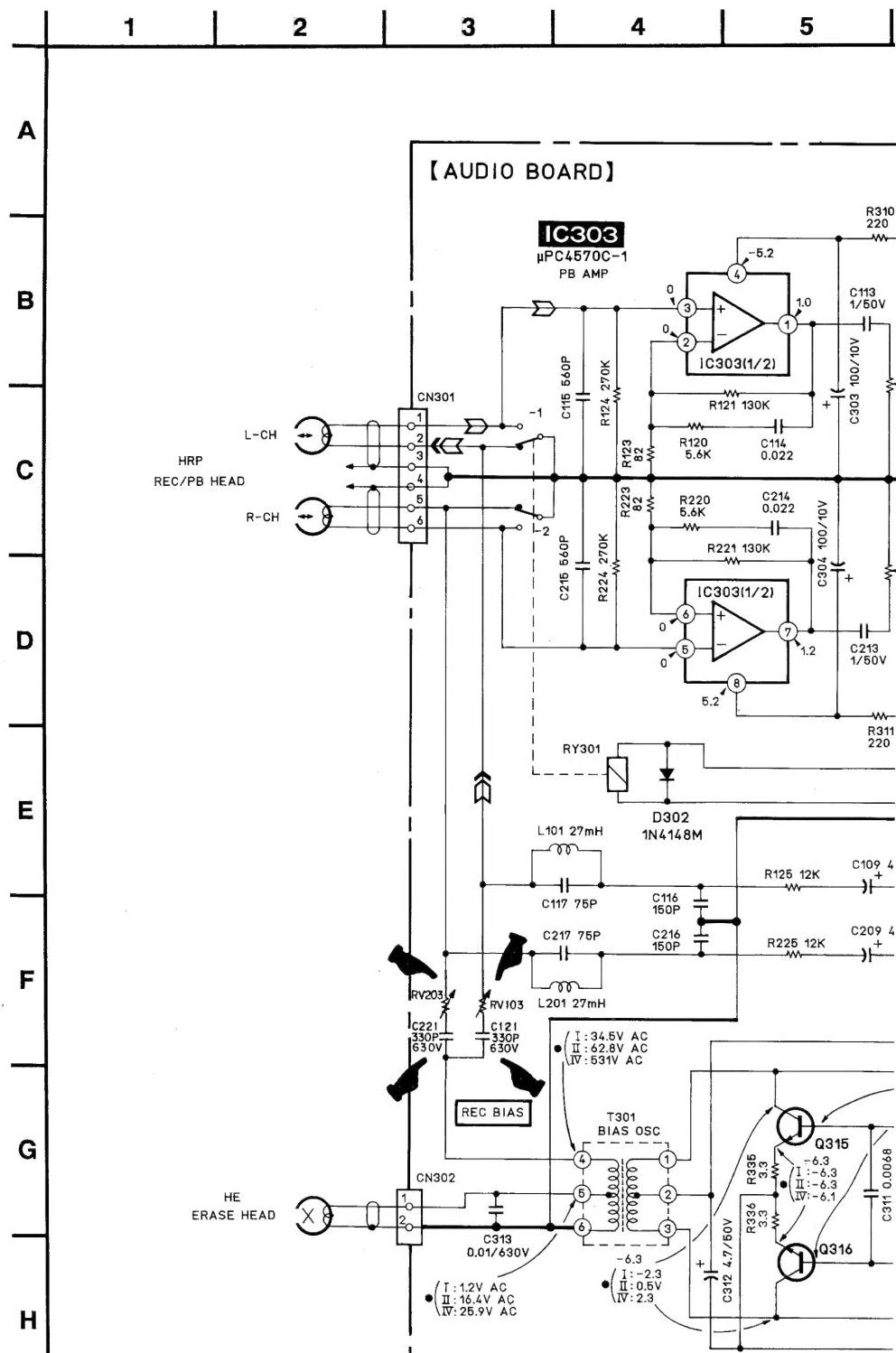


Confirm that the 10 kHz playback output is  $0 \pm 0.5$  dB, relative to the 315 Hz output. If necessary, adjust RV103 (L-CH), RV203 (R-CH) and repeat the steps given above.

## **DIAGRAMS**

**SCHEMATIC DIAGRAM (TC-FX170 Service manual page 13)**

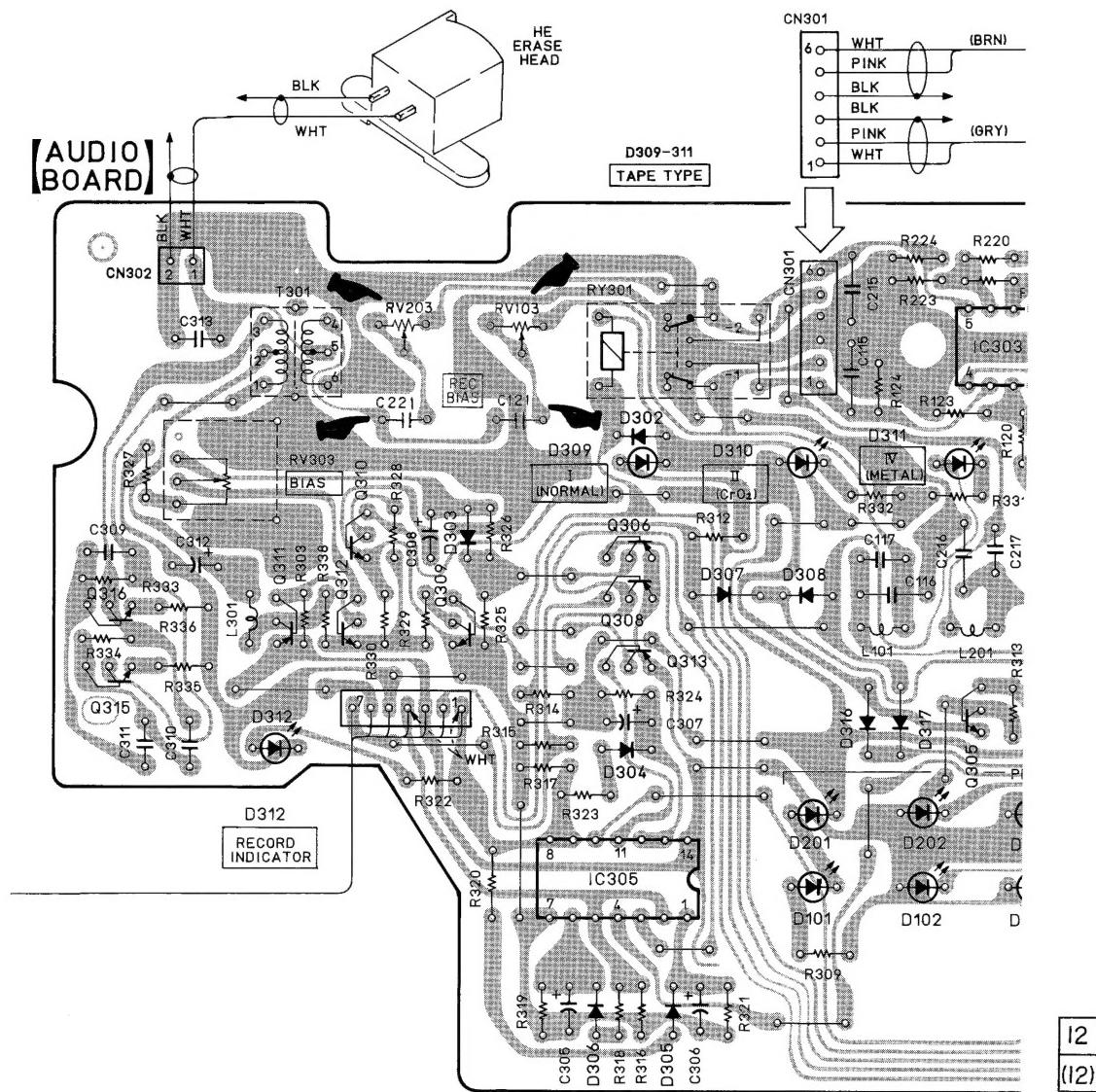
 : indicates changed portion  
[AUDIO BOARD]



PRINTED WIRING BOARDS (TC-FX170 Service manual page10)

 : indicates changed portion

**[AUDIO BOARD] ADDRESS B-6**



# TC-FX170

## SERVICE MANUAL

US Model  
Canadian Model  
AEP Model  
UK Model  
E Model



### SPECIFICATIONS

#### Recording system

4-track 2-channel stereo

Fast winding Approx. 120 sec. (with C-60 cassette)

Bias AC Bias

Signal-to-noise ratio (at peak level)

Cassette	Dolby NR switch	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-SLT/S)		58 dB	66 dB	73 dB
TYPE II (Sony UX-S)		57 dB	65 dB	72 dB
TYPE I (Sony HF-S)		55 dB	63 dB	70 dB

#### Total harmonic distortion

1.0% (with Sony METAL-SLT/S cassettes)

#### Frequency response (DOLBY NR OFF)

TYPE IV cassette (Sony METAL-SLT/S)	30 - 15,000 Hz ( $\pm 3$ dB, IEC) 30 - 13,000 Hz [ $\pm 3$ dB 0VU (-4 dB) recording]
TYPE II cassette (Sony UX-S)	30 - 14,000 Hz ( $\pm 3$ dB, IEC)
TYPE I cassette (Sony HF-S)	30 - 13,000 Hz ( $\pm 3$ dB, IEC)

Wow and flutter  $\pm 0.16\%$  W. Peak (IEC)  
 $0.11\%$  WRMS (NAB)  
 $\pm 0.2\%$  W Peak (DIN)

Model Name Using Similar Mechanism	TC-FX120
Tape Transport Mechanism Type	TCM-180VBN3

#### Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV
	Input impedance	47k ohms

#### Outputs

Line outputs (phono jacks)	Rated output level	0.32 V at a load impedance of 47k ohms
	Load impedance	Over 10k ohms
Headphone output (stereo phone jack)	Output level	0.2 mW at a load impedance of 32 ohms

#### General

##### Power requirements

US, Canadian Model:  
120 V AC, 60 Hz  
AEP Model:  
220 V AC, 50/60 Hz  
UK Model:  
240 V AC, 50 Hz  
E Model:  
110 - 220 V AC, 220 - 240 V  
AC, 50/60 Hz

STEREO CASSETTE DECK  
**SONY**®



Dolby noise reduction manufactured under license from  
Dolby Laboratories Licensing Corporation.  
"DOLBY" and the double-D symbol  are trademarks of  
Dolby Laboratories Licensing Corporation.

Power consumption 14 W  
 Dimensions Approx. 430 × 123 × 286 mm (w/h/d)  
                     (17 × 4 $\frac{7}{8}$  × 11 $\frac{1}{8}$  inches)  
 Weight including projecting parts and controls  
                     Approx. 3.5 kg (7 lbs 12 oz)

**Supplied accessory**  
 Audio connecting cords (2)

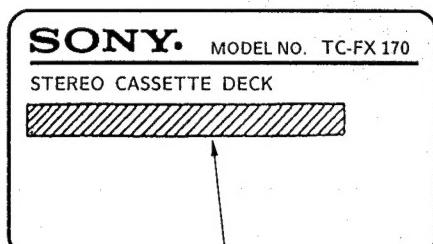
Design and specifications subject to change without notice.

#### Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

#### MODEL IDENTIFICATION

- Specification Label Printed on Back Panel -



US/Canadian Model: AC 120 V 60 Hz 14 W

AEP Model: AC 220 - 280 V ~ 50/60 Hz

UK Model: AC 240 V ~ 50/60 Hz

E Model: AC 110 - 120 V, 220 - 240 V

~ 50/60 Hz 15 W

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#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

#### SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

#### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamper). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

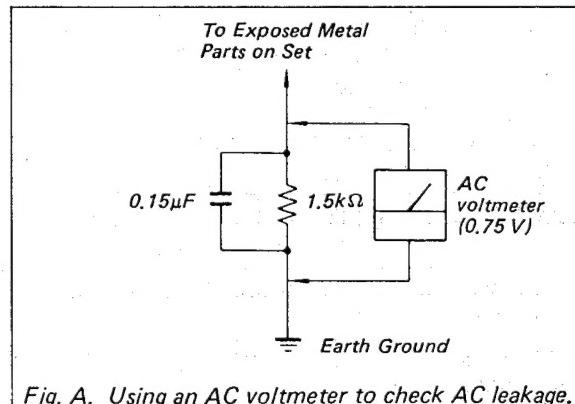


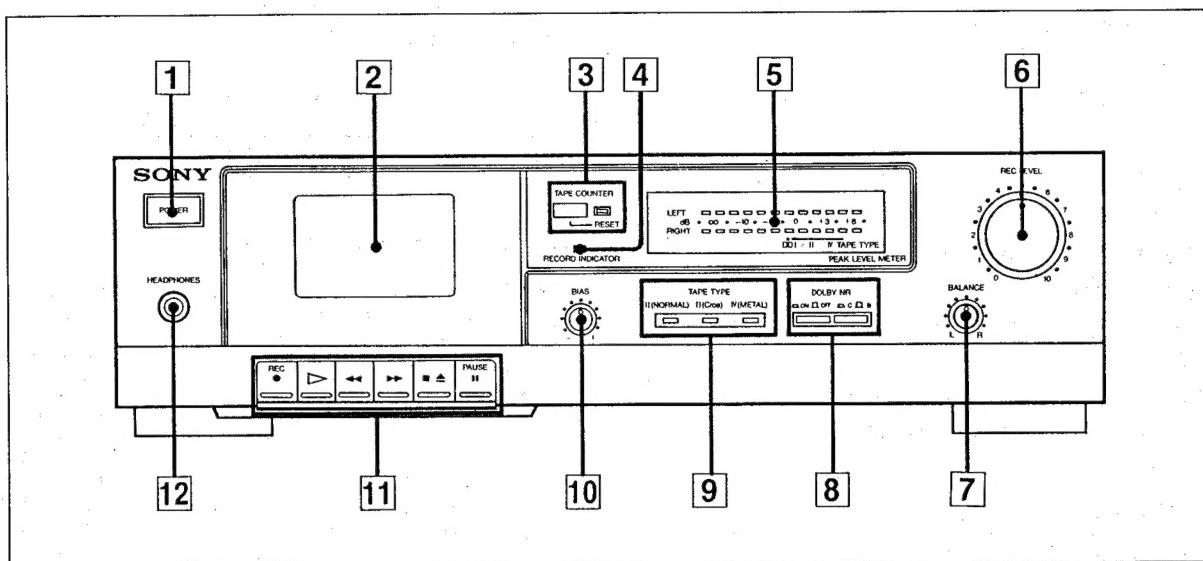
Fig. A. Using an AC voltmeter to check AC leakage.

#### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

## SECTION 1 GENERAL

### Identification of Front Panel Parts



- |   |  |
|---|--|
| <b>1</b> POWER switch                             | <b>9</b> TAPE TYPE indicators  |
| <b>2</b> Cassette holder                          | <b>10</b> BIAS control   |
| <b>3</b> TAPE COUNTER and RESET button            | <b>11</b> Tape operation buttons <ul style="list-style-type: none"> <li>REC (record) button</li> <li>► (play) button</li> <li>◀ (rewind) button</li> <li>▶▶ (fast-forward) button</li> <li>■△ (stop) and (eject) buttons</li> <li>II PAUSE button</li> </ul> |
| <b>4</b> RECORD INDICATOR                         |  |
| <b>5</b> PEAK LEVEL METER                         |  |
| <b>6</b> REC (recording) LEVEL control            |  |
| <b>7</b> BALANCE control                          |  |
| <b>8</b> DOLBY NR (Dolby Noise Reduction) buttons | <b>12</b> HEADPHONES jack (stereo phone jack)  |

## SECTION 2 ADJUSTMENTS

### 2-1. MECHANICAL ADJUSTMENTS

#### PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
 

record/playback head	pinch roller
erase head	rubber belts
capstan	idler
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

#### Torque Measurement

Torque	Torque	Meter reading
FWD	CQ-102C	30 to 70 g·cm (0.43 to 0.97 oz·inch)
FWD Back tension	CQ-102C	1.5 to 6 g·cm (0.02 to 0.07 oz·inch)
FF, REW	CQ-201B	63 g·cm or more (0.87 oz·inch or more)

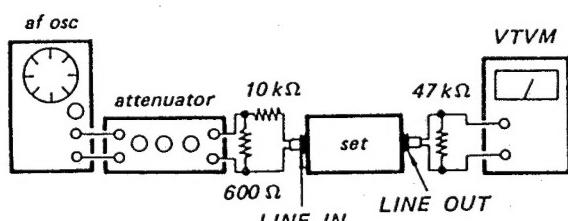
### 2-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual.

The adjustments should be performed for both L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.  
DOLBY NR switch: OFF
- Standard Record:  
Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

#### — Record Mode —



#### Standard Input Level

	LINE IN
source impedance	10 kΩ
input level	0.5 V ( -3.8 dBs)

#### Standard Output Level

	LINE OUT
load impedance	47 kΩ
output level	0.5 V ( -3.8 dBs)

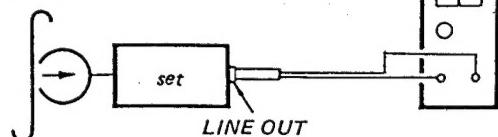
#### Capstan Motor Speed Adjustment

##### Procedure:

Mode: playback

speed checker  
LFM-30  
or  
digital frequency counter

test tape  
WS-48A  
(3kHz, 0dB)

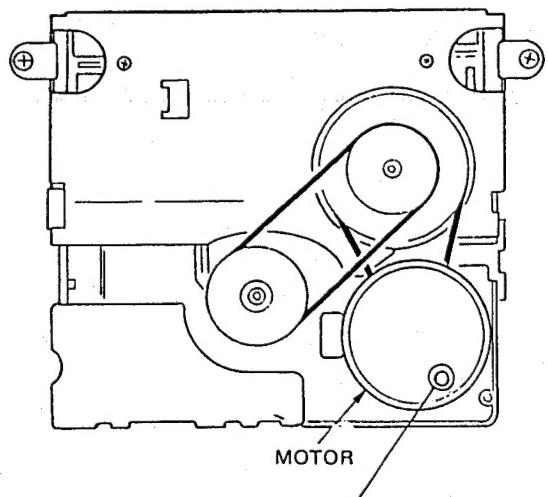


##### Specification:

Speed checker	Digital frequency counter
-0.3 ~ +0.3%	2,990 ~ 3,010 Hz

Frequency difference between the beginning and the end of the tape should be within 0.3% (10 Hz).

#### Adjustment Location



Adjust the speed by using screwdriver. When turning the screw clockwise, speed is faster.

## SECTION 3 DIAGRAMS

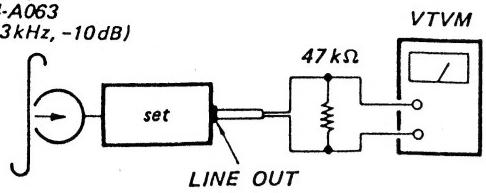
### 3-1. BLOCK DIAGRAM

#### Record/Playback Head Azimuth Adjustment

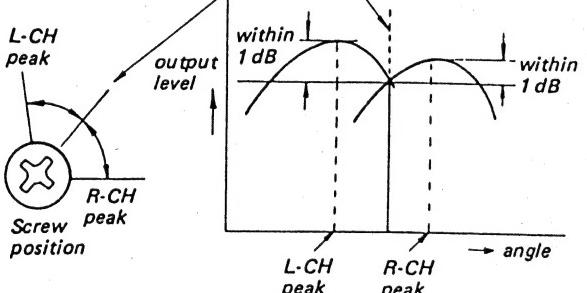
##### Procedure:

- Mode: playback

test tape  
P-4-A063  
(6.3kHz, -10dB)

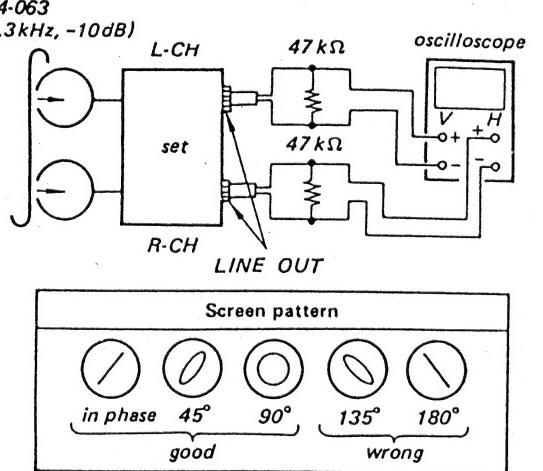


- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



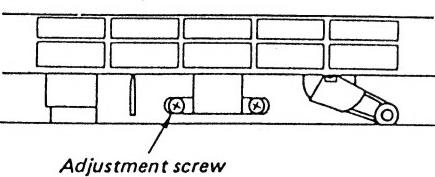
- Phase Check  
Mode: playback

test tape  
P-4-063  
(6.3kHz, -10dB)



##### Adjustment Location:

- Record/Playback head -

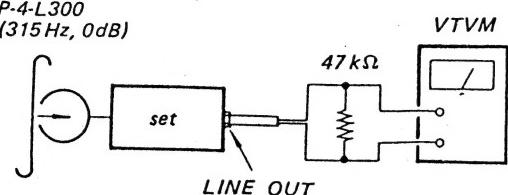


#### Playback Level Adjustment

##### Procedure:

- Mode: playback

test tape  
P-4-L300  
(315Hz, 0dB)



Adjust RV102 (L-CH) and RV202 (R-CH) so that the specification is met.

##### Specification:

Line OUT level:  $-7.7 \text{ dBs} \pm 0.5 \text{ dB}$

##### Level difference between channels:

less than 0.5 dB

Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

#### Record Bias Adjustment

##### Setting:

REC LEVEL control: standard record

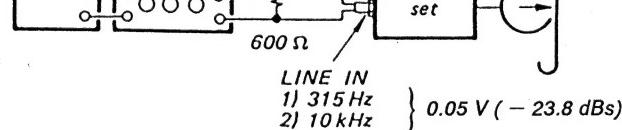
##### Procedure:

- Mode: record

AF OSC

attenuator

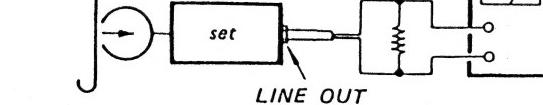
blank tape  
CS-123



- Mode: playback

recorded portion

VTVM



Confirm that the 10 kHz playback output is  $0 \pm 0.5 \text{ dB}$ , relative to the 315 Hz output. If necessary, adjust CT-301-1 (L-CH), CT301-2 (R-CH) and repeat the steps given above.

#### Record Level Adjustment

##### Setting:

REC LEVEL control: standard record

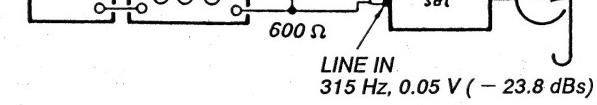
##### Procedure:

- Mode: record

AF OSC

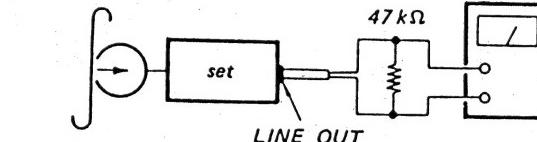
attenuator

blank tape  
CS-123



- Mode: playback

recorded portion



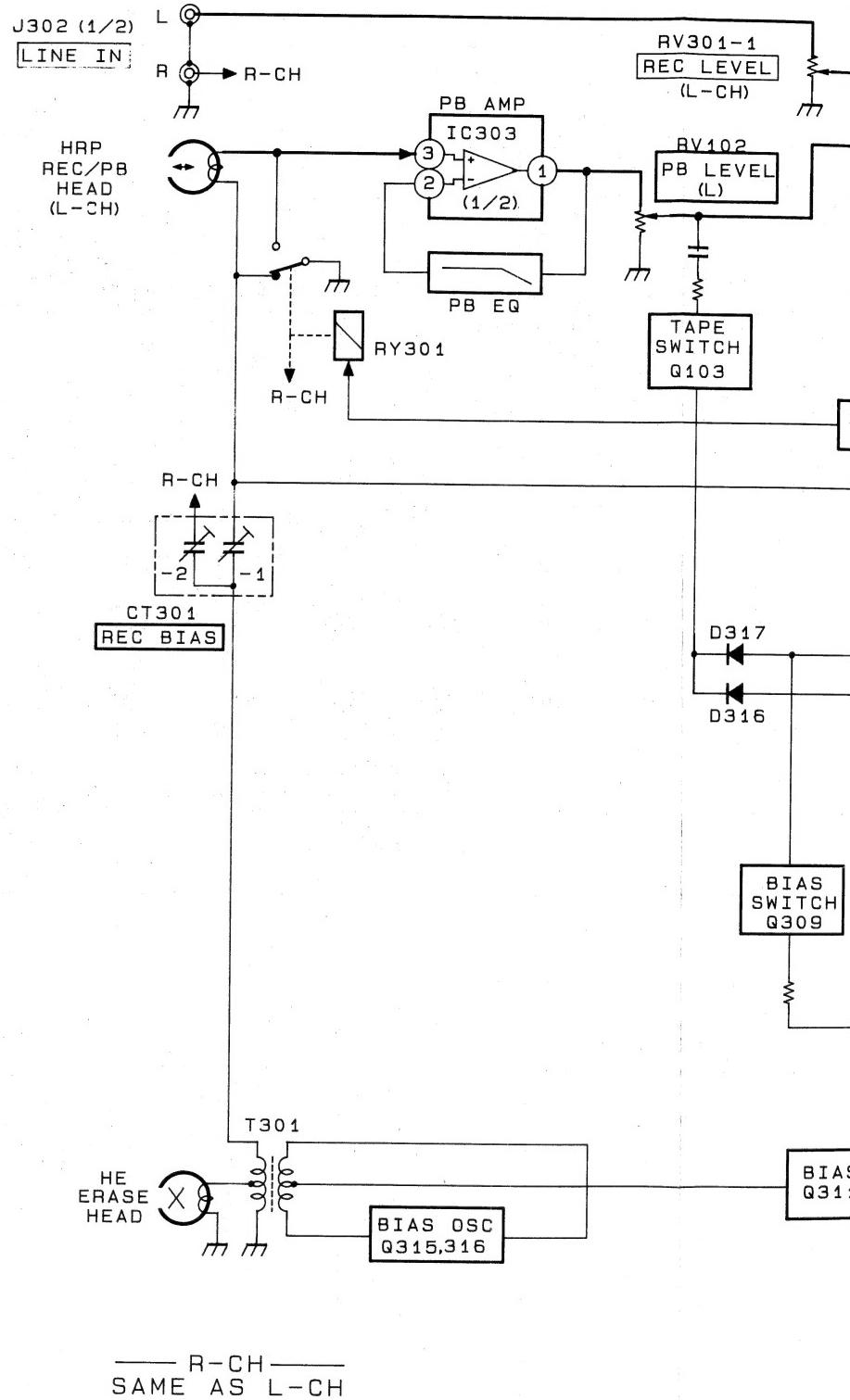
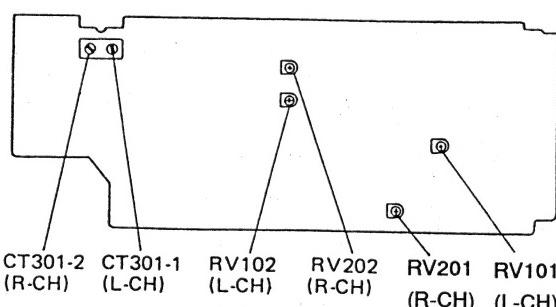
- Playback the signal recorded in step 1.

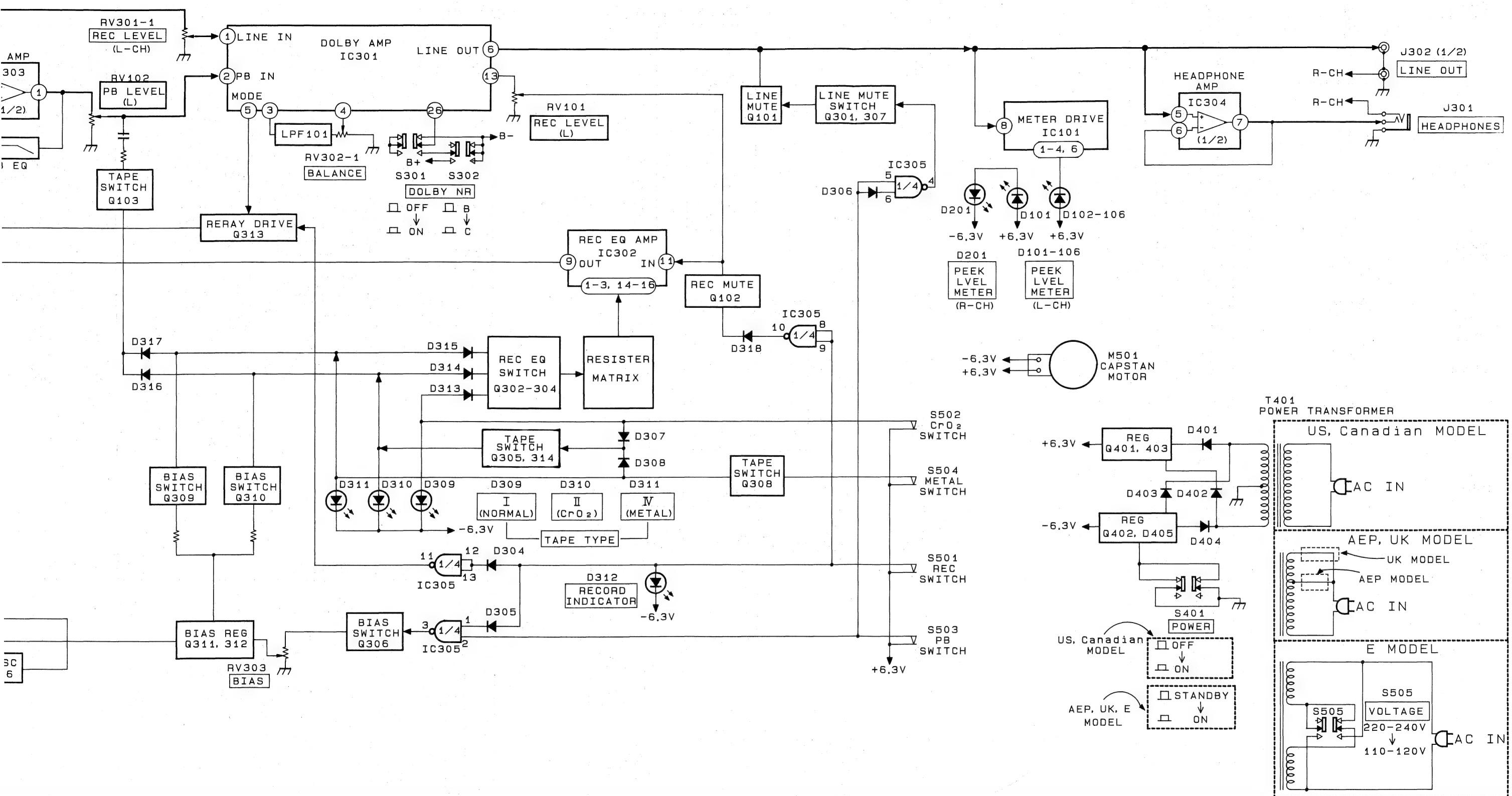
Confirm that the signal level is within the specification below. If necessary, adjust RV101 (L-CH), RV201 (R-CH) and repeat the step 1-3.

##### Specification:

LINE OUT level:  $-23.8 \text{ dBs} \pm 0.5 \text{ dB}$

##### Adjustment Location: audio board



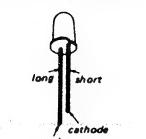


## 3-2. PRINTED WIRING BOARDS

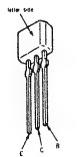
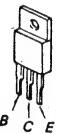
## ● Semiconductor Lead Layouts

DTA114ES  
DTA144ES  
DTC114ES  
DTC143TS  
2SC2603-EF

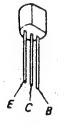
SEL1210S-C



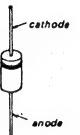
2SA1175-HFE

2SB1094-L  
2SD2012

2SC945-P



10E2N

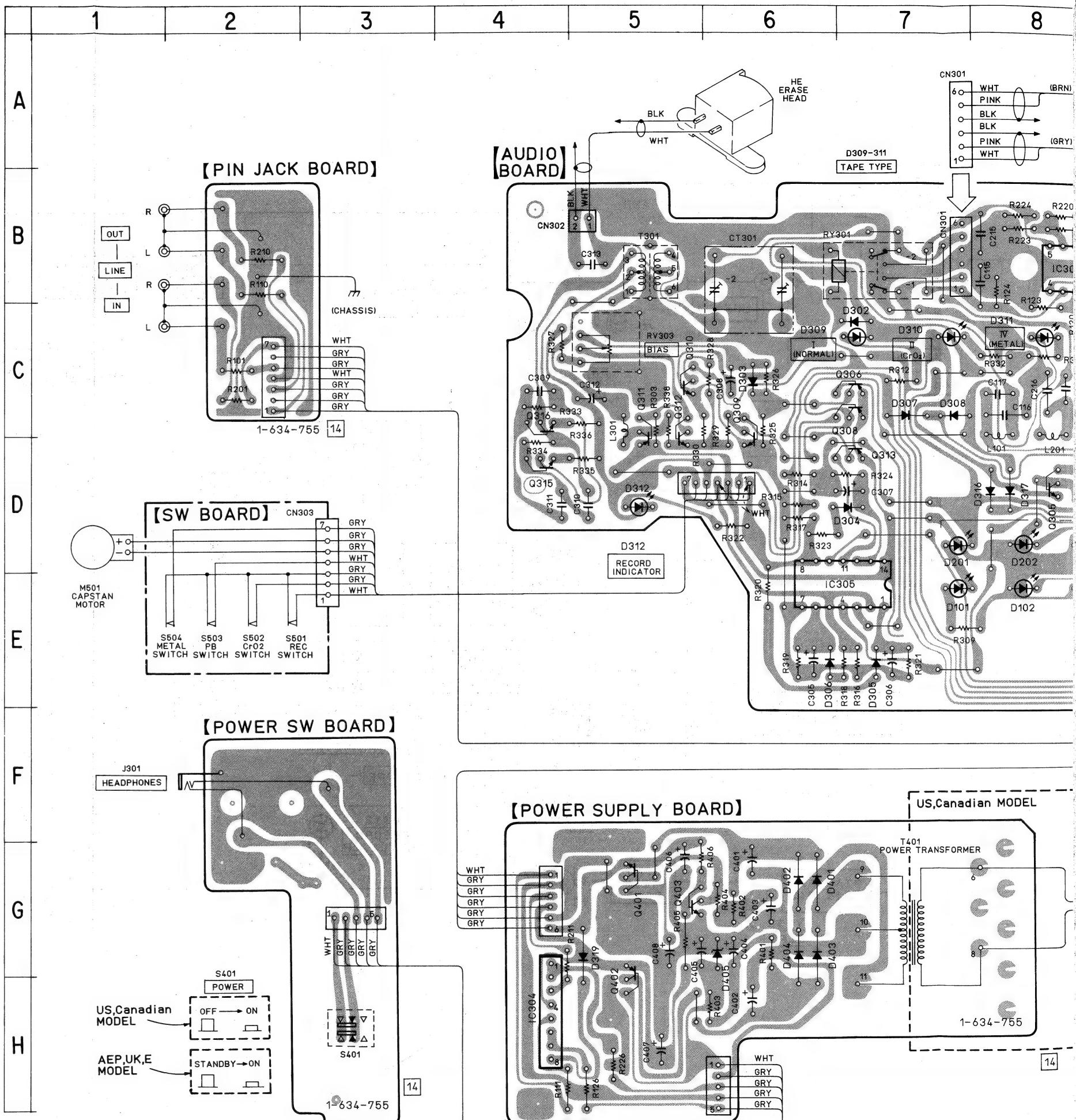


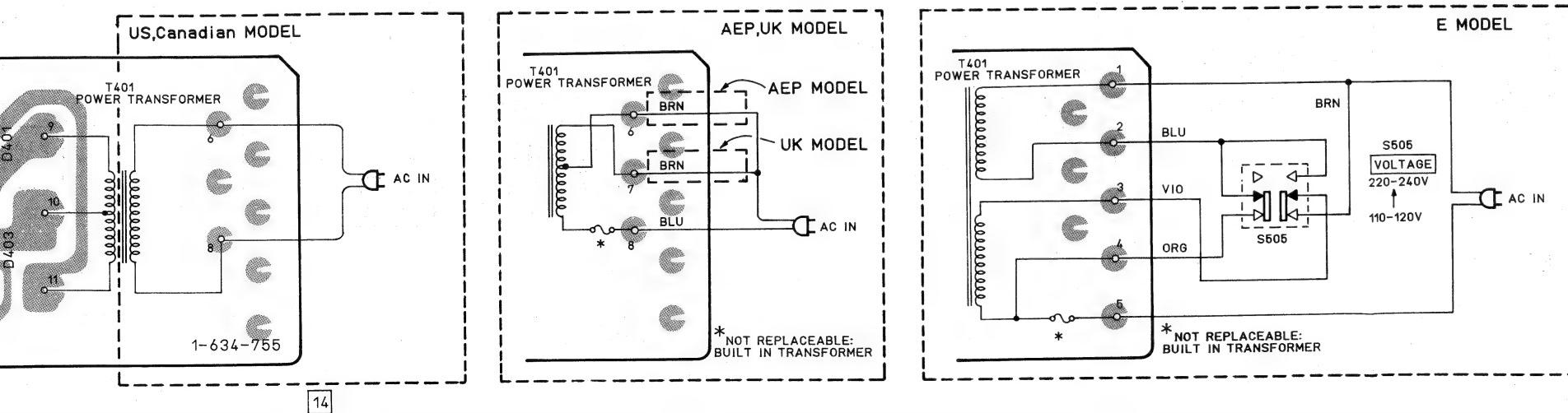
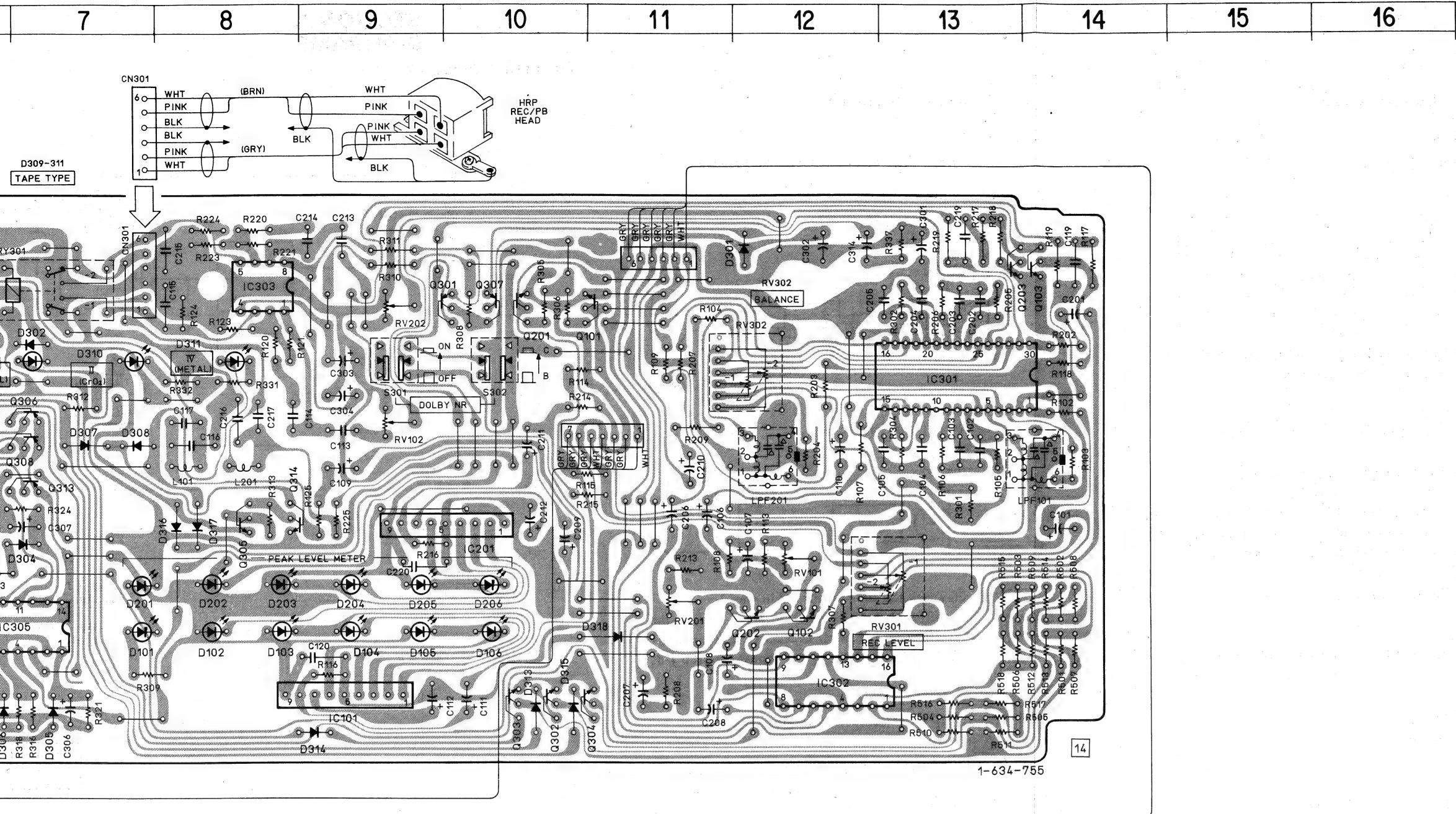
## ● Semiconductor Location

Ref. No.	Location
D101	E-7
D102	E-8
D103	E-8
D104	E-9
D105	E-9
D106	E-10
D201	D-7
D202	D-8
D203	D-8
D204	D-9
D205	D-9
D206	D-10
D301	B-12
D302	C-7
D303	C-6
D304	D-7
D305	E-7
D306	E-6
D307	C-7
D308	C-7
D309	C-7
D310	C-7
D311	C-8
D312	D-5
D313	E-10
D314	E-9
D315	E-10
D316	D-8
D317	D-8
D318	E-11
D319	G-5
D401	G-6
D402	G-6
D403	G-6
D404	G-6
D405	G-6
IC101	E-9
IC201	D-10
IC301	C-13
IC302	E-12
IC303	B-8
IC304	H-4
IC305	E-7
Q101	B-11
Q102	E-12
Q103	B-14
Q201	B-10
Q202	E-12
Q203	B-13
Q301	B-10
Q302	E-10
Q303	E-10
Q304	E-10
Q305	D-8
Q306	C-7
Q307	B-10
Q308	C-7
Q309	C-6
Q310	C-5
Q311	C-5
Q312	C-5
Q313	D-7
Q314	D-8
Q315	D-4
Q316	D-4
Q401	G-5
Q402	H-5
Q403	G-5

## Note:

- : parts extracted from the component side.
- : indicates side identified with part number.

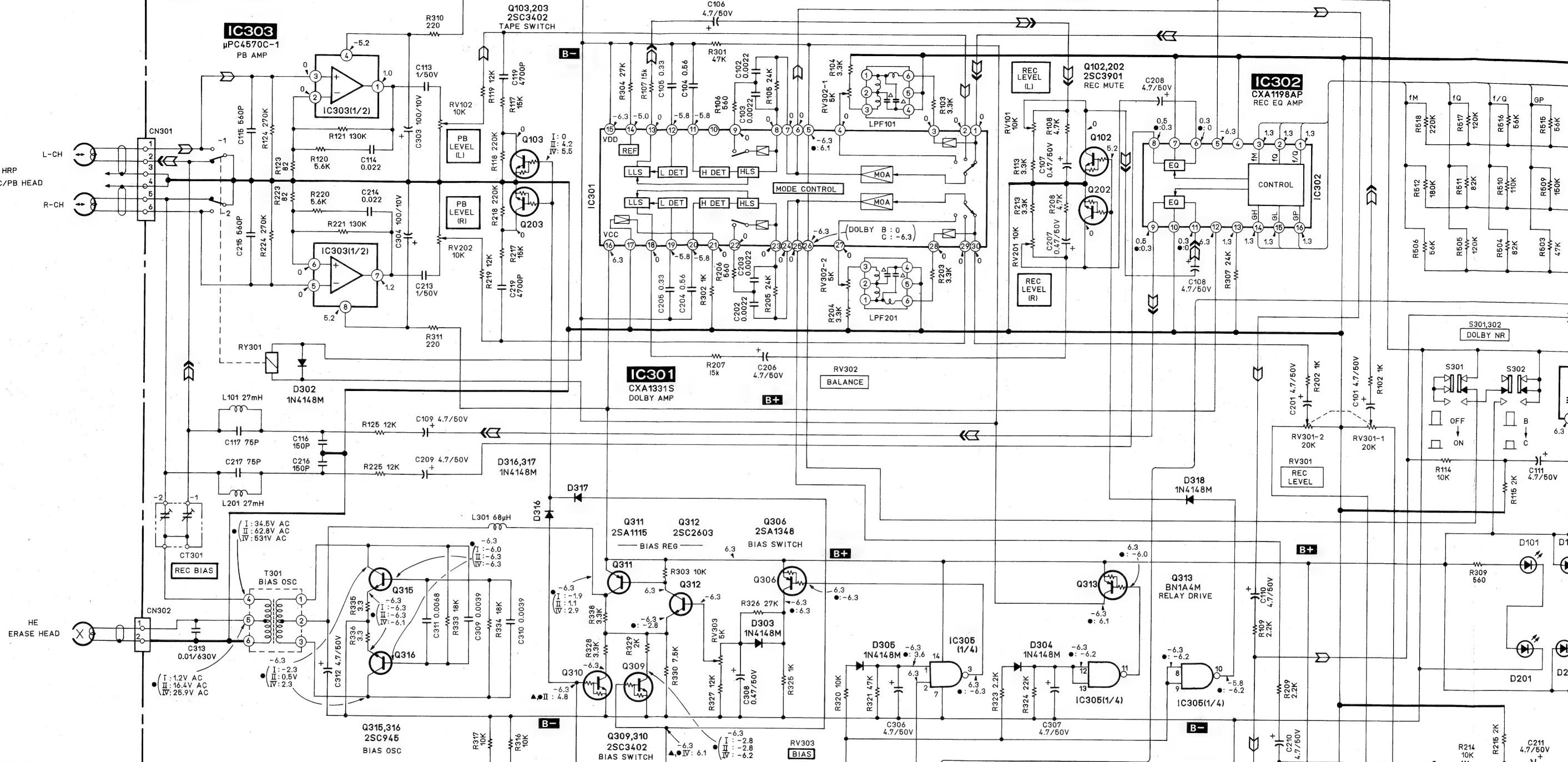




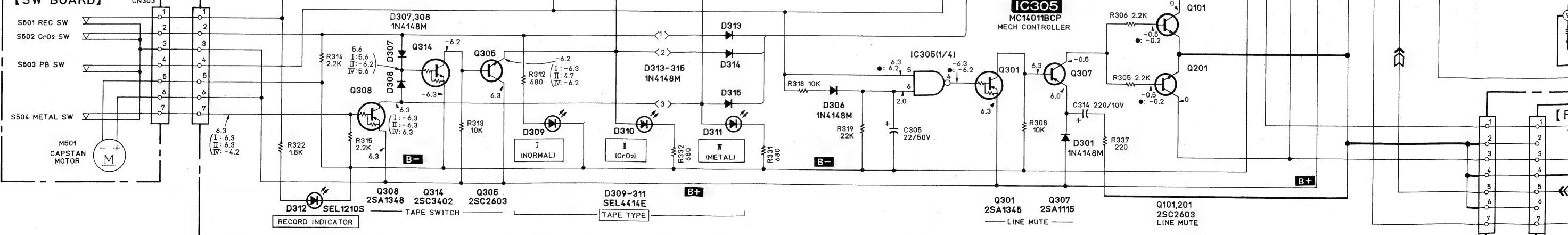
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

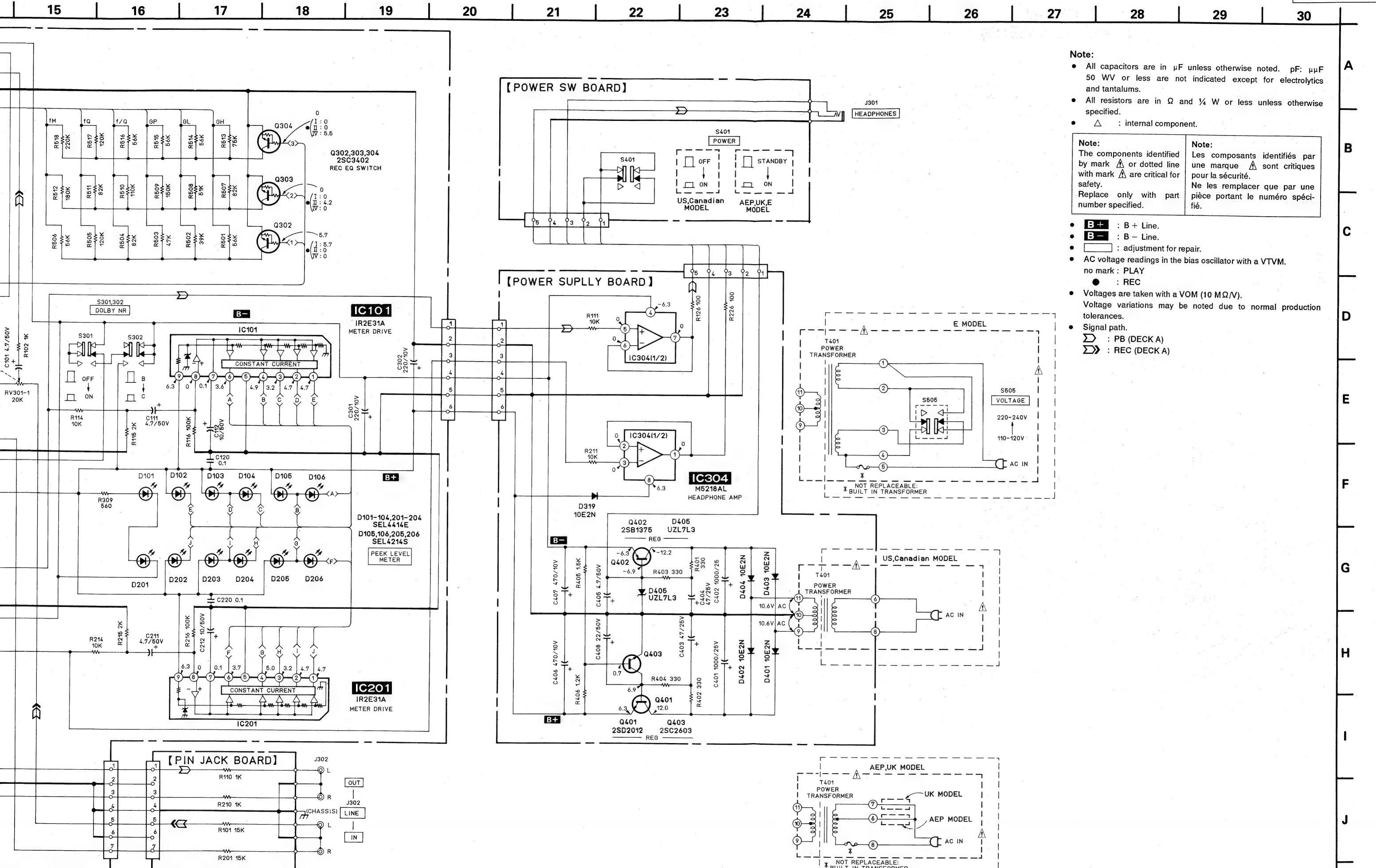
A B C D E F G H I J

## 【AUDIO BOARD】



## 【SW BOARD】





## SECTION 5 EXPLODED VIEWS

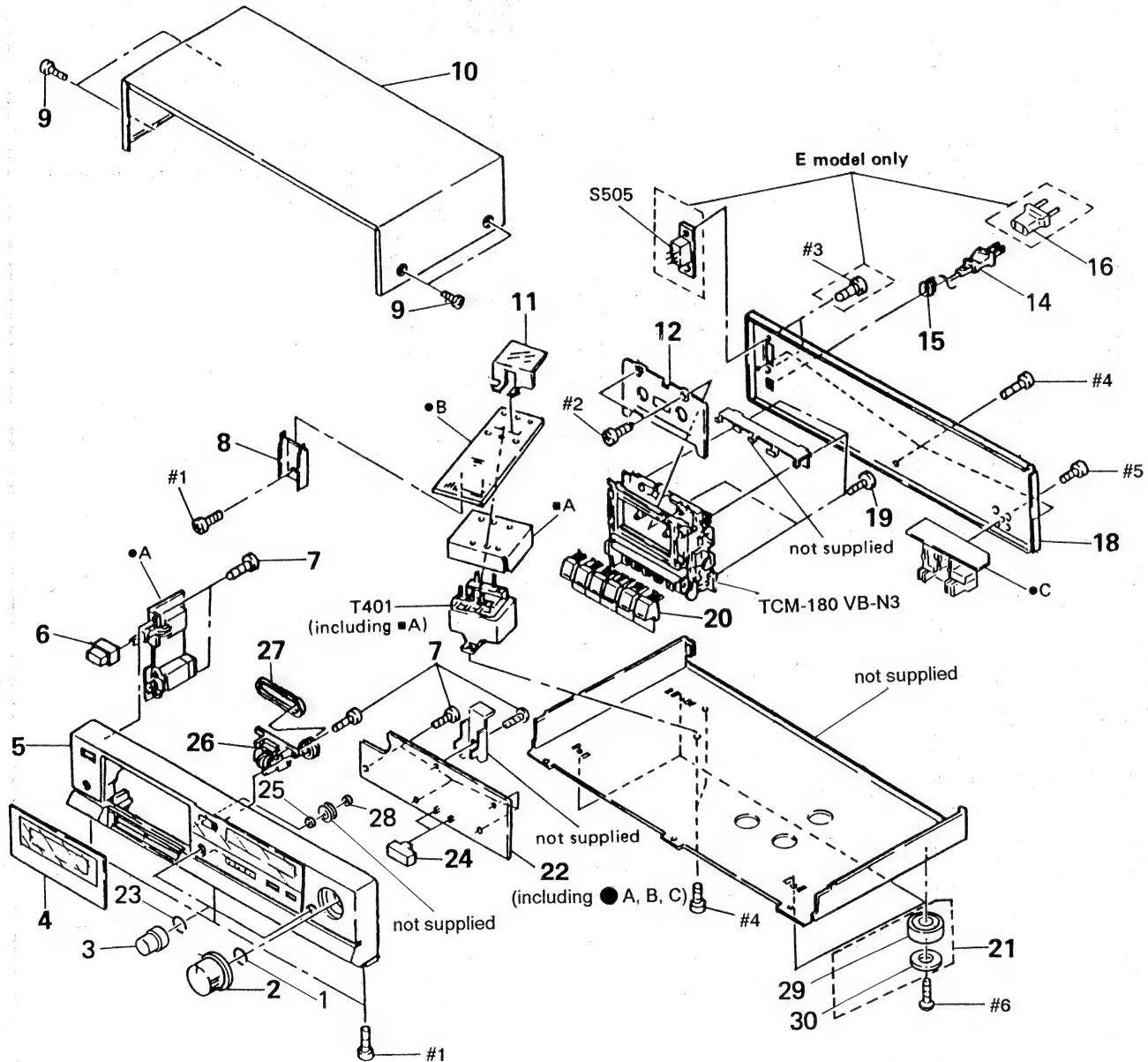
**NOTE:**

- -XX and -X mean standardized parts, so they may have some difference from the original one.
  - Color Indication of Appearance Parts Example: KNOB, BALANCE (WHITE) . . . (RED)
- ↑  
Parts Color Cabinet's Color

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

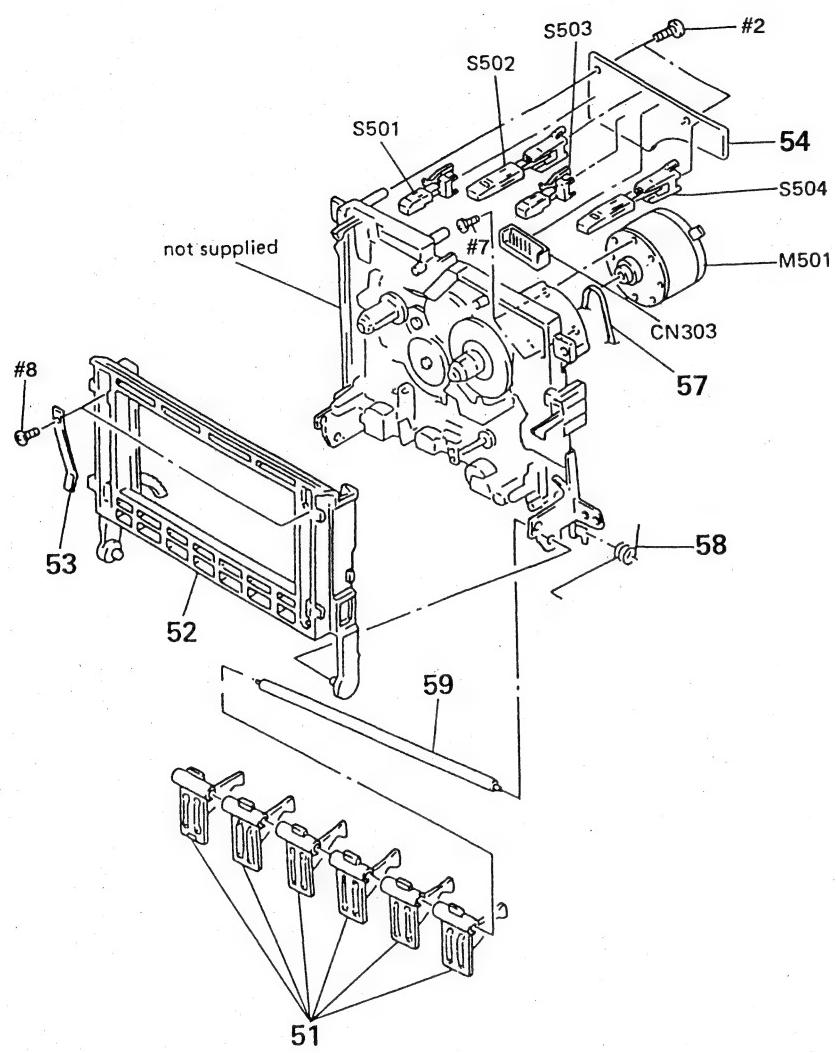
Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

**(1) CABINET AND FRONT PANEL SECTION**

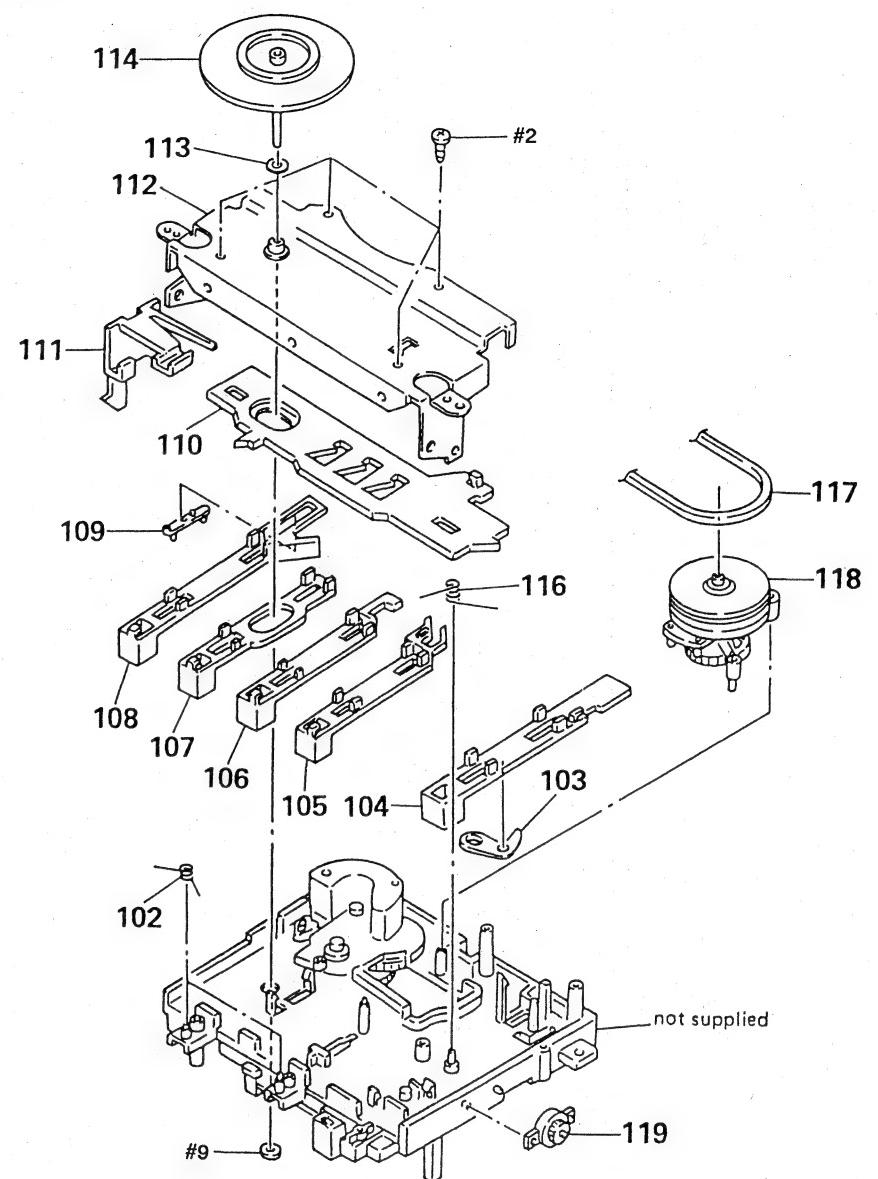
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-350-426-01	SPRING		18	* 3-367-318-32	PANEL, BACK (UK) (MADE IN MALAYSIA)	
2	3-367-438-12	KNOB (REC)		18	* 3-367-318-42	PANEL, BACK (E) (MADE IN MALAYSIA)	
3	3-367-431-01	KNOB (BAL)		18	* 3-367-318-22	PANEL, BACK (AEP) (MADE IN MALAYSIA)	
4	X-3362-657-1	LID ASSY, CASSETTE		18	* 3-367-318-01	PANEL, BACK (US, Canadian)	(MADE IN MALAYSIA)
5	A-2003-854-A	PANEL ASSY, FRONT (AEP, UK, E)		18	* 3-366-413-01	PANEL, BACK (US) (MADE IN JAPAN)	
	X-3362-658-1	PANEL ASSY, FRONT (US, Canadian)		19	4-928-635-21	SCREW, +BV (2.6X10) TAPPING	
6	4-917-460-01	KNOB, POWER (MADE IN MALAYSIA)		20	3-366-411-01	BUTTON (BLOCK)	
6	3-354-912-01	KNOB, POWER (MADE IN JAPAN)		21	X-4885-950-1	FOOT ASSY (US) (MADE IN JAPAN)	
7	4-928-635-01	SCREW, +BV (2.6X8) TAPPING		22	* A-2006-547-A	AUDIO BOARD, COMPLETE	(MADE IN MALAYSIA)
8	* 3-309-144-21	HEAT SINK		22	* A-2006-427-A	AUDIO BOARD, COMPLETE	(MADE IN JAPAN) (INCLUDING A, B, C)
9	3-704-366-01	SCREW (CASE) (M3X8)		23	3-356-957-01	SPRING	
10	4-943-088-31	CASE (MADE IN MALAYSIA)		24	3-350-810-01	BUTTON	
10	3-332-578-42	CASE (MADE IN JAPAN)		25	3-701-437-11	WASHER	
11	* 3-327-872-01	COVER (TRANSFORMER)		26	1-548-596-61	COUNTER, TAPE (MIDDLE TYPE)	
12	X-3358-214-1	PLATE ASSY, ORNAMENTAL		27	3-527-150-XX	BELT, CAPSTAN	
14	$\Delta$ 1-551-506-XX	CORD, POWER (US, Canadian) (MADE IN JAPAN)		28	3-558-708-11	WASHER, STOPPER	
14	$\Delta$ 1-551-884-32	CORD, POWER (UK) (MADE IN MALAYSIA)		29	3-318-688-31	FOOT (F58175 S) (AEP, UK, E)	(MADE IN MALAYSIA)
14	$\Delta$ 1-551-908-11	CORD, POWER (AEP) (MADE IN MALAYSIA)		29	3-318-688-51	FOOT (F58175 S) (US, Canadian)	(MADE IN MALAYSIA)
14	$\Delta$ 1-551-188-XX	CORD, POWER (E) (MADE IN MALAYSIA)		30	4-923-836-11	CUSHION	
14	$\Delta$ 1-551-628-12	CORD, POWER (US, Canadian)	(MADE IN MALAYSIA)	S505	$\Delta$ 1-552-535-00	SWITCH, POWER & VOLTAGE CHANGE (E)	
15	* 3-703-571-11	BUSHING (S) (4516), CORD (US, Canadian, E)		T401	$\Delta$ 1-449-593-11	TRANSFORMER, POWER (US, Canadian)	
15	* 3-703-244-02	BUSHING (S) (4516), CORD (AEP, UK)		T401	$\Delta$ 1-449-388-11	TRANSFORMER, POWER (E)	
16	$\Delta$ 1-569-007-11	ADAPTOR CONNECTION 2P (E)		T401	$\Delta$ 1-450-442-21	TRANSFORMER, POWER (AEP, UK)	

<b>Note:</b> The components identified by mark $\Delta$ or dotted line with mark $\Delta$ are critical for safety. Replace only with part number specified.	<b>Note:</b> Les composants identifiés par une marque $\Delta$ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
---	--

(2) MECHANISM SECTION-1  
(TCM-180VB-N3)



(3) MECHANISM SECTION-2  
(TCM-180VB-N3)

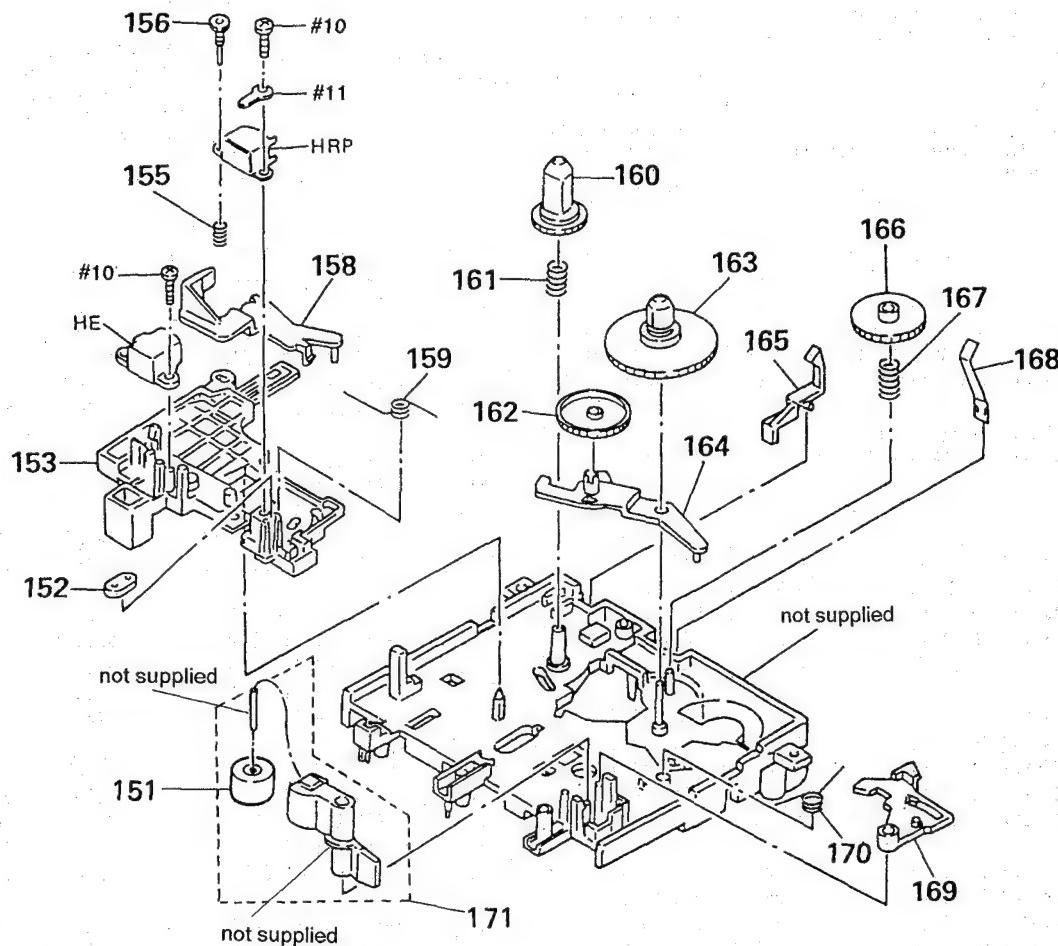


Ref. No.	Part No.	Description	Remark
51	3-358-271-01	LEVER (BUTTON BASE A)	
52	3-358-266-02	HOLDER, CASSETTE	
53	3-358-209-01	SPRING (CASSETTE HOLDER), LEAF	
54	* 1-635-160-11	PC BOARD, SWITCH	
57	3-358-230-01	BELT (A1)	
58	3-358-287-01	SPRING (LOADING A), TORSION	
59	3-358-242-01	SHAFT (BUTTON SHAFT)	
M501	X-3358-211-1	MOTOR (A) ASSY	

Ref. No.	Part No.	Description	Remark
102	3-358-232-01	SPRING (S-P F-R), TORSION	
103	* 3-358-204-01	LEVER (REC SAFETY)	
104	3-358-259-01	SLIDER (REC)	
105	3-358-258-01	SLIDER (REW)	
106	3-358-257-01	SLIDER (FF)	
107	3-358-256-01	SLIDER (STOP/EJECT)	
108	3-358-260-01	SLIDER (PAUSE)	
109	* 3-358-226-01	LEVER (PAUSE LEVER)	
110	* 3-358-249-01	SLIDER (LOCK PLATE)	

Ref. No.	Part No.	Description	Remark
111	* 3-358-261-02	SLIDER (HOLDER LOCK)	
112	* X-3358-213-1	BRACKET (A) ASSY	
113	3-701-437-01	WASHER	
114	X-3358-205-1	FLYWHEEL ASSY	
116	3-358-233-01	SPRING (REC-LOCK), TORSION	
117	3-358-230-01	BELT (A1)	
118	X-3358-202-1	LEVER (FR ARM) ASSY	
119	3-319-224-31	DAMPER, SMALL	

**(4) MECHANISM SECTION-3  
(TCM-180VB-N3)**



Ref. No.	Part No.	Description	Remark
151	3-578-143-11	PINCH ROLLER	
152	* 3-358-215-01	BUSHING (WIRE KIT RETAINER)	
153	3-358-265-01	SLIDER (HEAD PC BOARD A)	
155	3-358-234-01	SPRING (AZIMUTH), COMPRESSION	
156	3-358-288-01	SCREW (T), AZIMUTH	
158	* 3-358-251-01	LEVER (TENSION DETECTION ARM)	
159	3-358-228-01	SPRING, TORSION	
160	3-358-248-01	GEAR (SUPPLY REEL)	
161	3-358-208-01	SPRING (SUPPLY), COMPRESSION	
162	* 3-358-284-01	GEAR (TU GEAR)	

Ref. No.	Part No.	Description	Remark
163	X-3358-203-1	TABLE (T) ASSY, REEL	
164	* 3-358-252-01	LEVER (TU ARM)	
165	* 3-358-255-01	LEVER (GB LEVER)	
166	* 3-358-224-01	GEAR (FF GEAR)	
167	3-358-207-01	SPRING (FF GEAR), COMPRESSION	
168	3-358-227-01	SPRING, LEAF	
169	* 3-358-253-01	LEVER (SHUT-OFF LEVER)	
170	3-358-243-01	SPRING (TU-SHUT), TORSION	
171	X-3358-204-1	LEVER (PINCH LEVER) ASSY	
HE	1-543-673-11	HEAD, MAGNETIC (ERASE)	
HRP	1-543-319-11	HEAD, MAGNETIC (REC/PB)	

## SECTION 6 ELECTRICAL PARTS LIST

**AUDIO****PIN JACK****POWER SW****POWER SUPPLY****NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- **RESISTORS**  
All resistors are in ohms.  
METAL: Metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F: nonflammable

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- **SEMICONDUCTORS**  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$ A..., uPA...:  $\mu$ PA...,  
uPB...:  $\mu$ PB..., uPC...:  $\mu$ PC...,  
uPD...:  $\mu$ PD...
- **CAPACITORS**  
uF:  $\mu$ F
- **COILS**  
uH:  $\mu$ H

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* A-2006-547-A AUDIO BOARD, COMPLETE (MADE IN MALAYSIA) (INCLUDING PIN JACK BOARD, POWER SW BOARD, POWER SUPPLY BOARD)							
*****							
	* 3-309-144-21 HEAT SINK 7-682-547-04 SCREW +BVTT 3X6 (S)						
< CAPACITOR >							
C101	1-124-927-11 ELECT	4.7uF	20% 100V	C207	1-124-902-00 ELECT	0.47uF	20% 50V
C102	1-130-475-00 MYLAR	0.0022uF	5% 50V	C208	1-124-927-11 ELECT	4.7uF	20% 100V
C103	1-130-475-00 MYLAR	0.0022uF	5% 50V	C209	1-124-927-11 ELECT	4.7uF	20% 100V
C104	1-136-174-00 FILM	0.56uF	5% 50V	C210	1-124-927-11 ELECT	4.7uF	20% 100V
C105	1-136-171-00 FILM	0.33uF	5% 50V	C211	1-124-927-11 ELECT	4.7uF	20% 100V
C106	1-124-927-11 ELECT	4.7uF	20% 100V	C212	1-124-907-11 ELECT	10uF	20% 50V
C107	1-124-902-00 ELECT	0.47uF	20% 50V	C213	1-124-611-00 ELECT	1uF	20% 50V
C108	1-124-927-11 ELECT	4.7uF	20% 100V	C214	1-136-157-00 FILM	0.022uF	5% 50V
C109	1-124-927-11 ELECT	4.7uF	20% 100V	C215	1-162-291-31 CERAMIC	560PF	10% 50V
C110	1-124-927-11 ELECT	4.7uF	20% 100V	C216	1-162-284-31 CERAMIC	150PF	10% 50V
C111	1-124-927-11 ELECT	4.7uF	20% 100V	C217	1-136-273-91 FILM	75PF	5% 630V
C112	1-124-907-11 ELECT	10uF	20% 50V	C219	1-161-377-00 CERAMIC	0.0047uF	30% 16V
C113	1-124-611-00 ELECT	1uF	20% 50V	C220	1-164-159-11 CERAMIC	0.1uF	50V
C114	1-136-157-00 FILM	0.022uF	5% 50V	C301	1-126-176-11 ELECT	220uF	20% 10V
C115	1-162-291-31 CERAMIC	560PF	10% 50V	C302	1-126-176-11 ELECT	220uF	20% 10V
C116	1-162-284-31 CERAMIC	150PF	10% 50V	C303	1-124-443-00 ELECT	100uF	20% 10V
C117	1-136-273-91 FILM	75PF	5% 630V	C304	1-124-443-00 ELECT	100uF	20% 10V
C119	1-161-377-00 CERAMIC	0.0047uF	30% 16V	C305	1-126-233-11 ELECT	22uF	20% 50V
C120	1-164-159-11 CERAMIC	0.1uF	50V	C306	1-124-927-11 ELECT	4.7uF	20% 100V
C201	1-124-927-11 ELECT	4.7uF	20% 100V	C307	1-124-927-11 ELECT	4.7uF	20% 100V
C202	1-130-475-00 MYLAR	0.0022uF	5% 50V	C308	1-124-902-00 ELECT	0.47uF	20% 50V
C203	1-130-475-00 MYLAR	0.0022uF	5% 50V	C309	1-130-478-00 MYLAR	0.0039uF	5% 50V
C204	1-136-174-00 FILM	0.56uF	5% 50V	C310	1-130-478-00 MYLAR	0.0039uF	5% 50V
C205	1-136-171-00 FILM	0.33uF	5% 50V	C311	1-130-481-00 MYLAR	0.0068uF	5% 50V
C206	1-124-927-11 ELECT	4.7uF	20% 100V	C312	1-124-927-11 ELECT	4.7uF	20% 100V
				C313	1-136-601-11 FILM	0.01uF	5% 630V
				C314	1-126-176-11 ELECT	220uF	20% 10V
				C401	1-124-557-11 ELECT	1000uF	20% 25V
				C402	1-124-557-11 ELECT	1000uF	20% 25V
				C403	1-124-477-11 ELECT	47uF	20% 25V
				C404	1-124-477-11 ELECT	47uF	20% 25V
				C405	1-124-927-11 ELECT	4.7uF	20% 100V
				C406	1-124-472-11 ELECT	470uF	20% 10V
				C407	1-124-472-11 ELECT	470uF	20% 10V
				C408	1-126-233-11 ELECT	22uF	20% 50V

## AUDIO

## PIN JACK

## POWER SW

## POWER SUPPLY

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark				
< CONNECTOR >											
CN301	* 1-564-509-11	PLUG, CONNECTOR 6P		IC101	8-759-917-42	IC IR2E31A					
CN302	* 1-564-505-11	PLUG, CONNECTOR 2P		IC201	8-759-917-42	IC IR2E31A					
< TRIMMER >											
CT301	1-141-225-00	CAP, TUNING, TRIMAR		IC301	8-752-035-94	IC CXA1331S					
< DIODE >											
D101	8-719-304-37	DIODE SEL4414E-C		IC302	8-752-038-02	IC CXA1198AP					
D102	8-719-304-37	DIODE SEL4414E-C		IC303	8-759-111-44	IC uPC4570C-1					
D103	8-719-304-37	DIODE SEL4414E-C		< IC >							
D104	8-719-304-37	DIODE SEL4414E-C		IC304	8-759-634-50	IC M5218AL					
D105	8-719-304-32	DIODE SEL4214S-C		IC305	8-759-140-11	IC uPD4011BC					
D106	8-719-304-32	DIODE SEL4214S-C		< JACK >							
D201	8-719-304-37	DIODE SEL4414E-C		J301	1-507-981-11	JACK (LARGE TYPE) (HEADPHONES)					
D202	8-719-304-37	DIODE SEL4414E-C		J302	1-565-259-11	JACK, PIN 4P (LINE IN/OUT)					
D203	8-719-304-37	DIODE SEL4414E-C		< COIL >							
D204	8-719-304-37	DIODE SEL4414E-C		L101	1-410-780-11	INDUCTOR 27mH					
D205	8-719-304-32	DIODE SEL4214S-C		L201	1-410-780-11	INDUCTOR 27mH					
D206	8-719-304-32	DIODE SEL4214S-C		L301	1-410-976-11	INDUCTOR 68uH					
D301	8-719-912-20	DIODE ISS120		< FILTER >							
D302	8-719-912-20	DIODE ISS120		LPF101	1-236-087-11	FILTER, LOW PASS					
D303	8-719-912-20	DIODE ISS120		LPF201	1-236-087-11	FILTER, LOW PASS					
D304	8-719-912-20	DIODE ISS120		< TRANSISTOR >							
D305	8-719-912-20	DIODE ISS120		Q101	8-729-620-05	TRANSISTOR 2SC2603-EF					
D306	8-719-912-20	DIODE ISS120		Q102	8-729-900-74	TRANSISTOR DTC143TS					
D307	8-719-912-20	DIODE ISS120		Q103	8-729-900-80	TRANSISTOR DTC114ES					
D308	8-719-912-20	DIODE ISS120		Q201	8-729-620-05	TRANSISTOR 2SC2603-EF					
D309	8-719-304-37	DIODE SEL4414E-C		Q202	8-729-900-74	TRANSISTOR DTC143TS					
D310	8-719-304-37	DIODE SEL4414E-C		Q203	8-729-900-80	TRANSISTOR DTC114ES					
D311	8-719-304-37	DIODE SEL4414E-C		Q301	8-729-900-65	TRANSISTOR DTA144ES					
D312	8-719-302-46	DIODE SEL1210S-C-2		Q302	8-729-900-80	TRANSISTOR DTC114ES					
D313	8-719-912-20	DIODE ISS120		Q303	8-729-900-80	TRANSISTOR DTC114ES					
D314	8-719-912-20	DIODE ISS120		Q304	8-729-900-80	TRANSISTOR DTC114ES					
D315	8-719-912-20	DIODE ISS120		Q305	8-729-620-05	TRANSISTOR 2SC2603-EF					
D316	8-719-912-20	DIODE ISS120		Q306	8-729-900-61	TRANSISTOR DTA114ES					
D317	8-719-912-20	DIODE ISS120		Q307	8-729-119-76	TRANSISTOR 2SA1175-HFE					
D318	8-719-912-20	DIODE ISS120		Q308	8-729-900-61	TRANSISTOR DTA114ES					
D319	8-719-200-77	DIODE 10E2N		Q309	8-729-900-80	TRANSISTOR DTC114ES					
D401	8-719-200-77	DIODE 10E2N		Q310	8-729-900-80	TRANSISTOR DTC114ES					
D402	8-719-200-77	DIODE 10E2N		Q311	8-729-119-76	TRANSISTOR 2SA1175-HFE					
D403	8-719-200-77	DIODE 10E2N		Q312	8-729-620-05	TRANSISTOR 2SC2603-EF					
D404	8-719-200-77	DIODE 10E2N		Q313	8-729-900-61	TRANSISTOR DTA114ES					
D405	8-719-000-81	DIODE UZL-7L3		Q314	8-729-900-80	TRANSISTOR DTC114ES					
				Q315	8-729-194-57	TRANSISTOR 2SC945-P					
				Q316	8-729-194-57	TRANSISTOR 2SC945-P					
				Q401	8-729-209-15	TRANSISTOR 2SD2012					
				Q402	8-729-111-67	TRANSISTOR 2SB1094-L					
				Q403	8-729-620-05	TRANSISTOR 2SC2603-EF					

**AUDIO****PIN JACK****POWER SW****POWER SUPPLY**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< RESISTOR >							
R101	1-249-431-11	CARBON	15K 5% 1/4W	R224	1-247-889-00	CARBON	270K 5% 1/4W
R102	1-249-417-11	CARBON	1K 5% 1/4W	R225	1-249-430-11	CARBON	12K 5% 1/4W
R103	1-249-423-11	CARBON	3.3K 5% 1/4W	R226	1-249-405-11	CARBON	100 5% 1/4W
R104	1-249-423-11	CARBON	3.3K 5% 1/4W	R301	1-249-437-11	CARBON	47K 5% 1/4W
R105	1-247-864-11	CARBON	24K 5% 1/4W	R302	1-249-417-11	CARBON	1K 5% 1/4W
R106	1-249-414-11	CARBON	560 5% 1/4W	R303	1-249-429-11	CARBON	10K 5% 1/4W
R107	1-249-431-11	CARBON	15K 5% 1/4W	R304	1-215-455-00	METAL	27K 1% 1/6W
R108	1-249-425-11	CARBON	4.7K 5% 1/4W	R305	1-249-421-11	CARBON	2.2K 5% 1/4W
R109	1-249-421-11	CARBON	2.2K 5% 1/4W	R306	1-249-421-11	CARBON	2.2K 5% 1/4W
R110	1-249-417-11	CARBON	1K 5% 1/4W	R307	1-247-864-11	CARBON	24K 5% 1/4W
R111	1-249-429-11	CARBON	10K 5% 1/4W	R308	1-249-429-11	CARBON	10K 5% 1/4W
R113	1-249-423-11	CARBON	3.3K 5% 1/4W	R309	1-249-414-11	CARBON	560 5% 1/4W
R114	1-249-429-11	CARBON	10K 5% 1/4W	R310	1-249-409-11	CARBON	220 5% 1/4W
R115	1-247-838-00	CARBON	2K 5% 1/4W	R311	1-249-409-11	CARBON	220 5% 1/4W
R116	1-249-441-11	CARBON	100K 5% 1/4W	R312	1-249-415-11	CARBON	680 5% 1/4W
R117	1-249-431-11	CARBON	15K 5% 1/4W	R313	1-249-429-11	CARBON	10K 5% 1/4W
R118	1-247-887-00	CARBON	220K 5% 1/4W	R314	1-249-421-11	CARBON	2.2K 5% 1/4W
R119	1-249-430-11	CARBON	12K 5% 1/4W	R315	1-249-421-11	CARBON	2.2K 5% 1/4W
R120	1-249-426-11	CARBON	5.6K 5% 1/4W	R316	1-249-429-11	CARBON	10K 5% 1/4W
R121	1-247-882-11	CARBON	130K 5% 1/4W	R317	1-249-429-11	CARBON	10K 5% 1/4W
R123	1-249-404-00	CARBON	82 5% 1/4W	R318	1-249-429-11	CARBON	10K 5% 1/4W
R124	1-247-889-00	CARBON	270K 5% 1/4W	R319	1-249-433-11	CARBON	22K 5% 1/4W
R125	1-249-430-11	CARBON	12K 5% 1/4W	R320	1-249-429-11	CARBON	10K 5% 1/4W
R126	1-249-405-11	CARBON	100 5% 1/4W	R321	1-249-437-11	CARBON	47K 5% 1/4W
R201	1-249-431-11	CARBON	15K 5% 1/4W	R322	1-249-420-11	CARBON	1.8K 5% 1/4W
R202	1-249-417-11	CARBON	1K 5% 1/4W	R323	1-249-421-11	CARBON	2.2K 5% 1/4W
R203	1-249-423-11	CARBON	3.3K 5% 1/4W	R324	1-249-433-11	CARBON	22K 5% 1/4W
R204	1-249-423-11	CARBON	3.3K 5% 1/4W	R325	1-249-417-11	CARBON	1K 5% 1/4W
R205	1-247-864-11	CARBON	24K 5% 1/4W	R326	1-249-434-11	CARBON	27K 5% 1/4W
R206	1-249-414-11	CARBON	560 5% 1/4W	R327	1-249-430-11	CARBON	12K 5% 1/4W
R207	1-249-431-11	CARBON	15K 5% 1/4W	R328	1-249-423-11	CARBON	3.3K 5% 1/4W
R208	1-249-425-11	CARBON	4.7K 5% 1/4W	R329	1-247-838-00	CARBON	2K 5% 1/4W
R209	1-249-421-11	CARBON	2.2K 5% 1/4W	R330	1-247-852-11	CARBON	7.5K 5% 1/4W
R210	1-249-417-11	CARBON	1K 5% 1/4W	R331	1-249-415-11	CARBON	680 5% 1/4W
R211	1-249-429-11	CARBON	10K 5% 1/4W	R332	1-249-415-11	CARBON	680 5% 1/4W
R213	1-249-423-11	CARBON	3.3K 5% 1/4W	R333	1-249-432-11	CARBON	18K 5% 1/4W
R214	1-249-429-11	CARBON	10K 5% 1/4W	R334	1-249-432-11	CARBON	18K 5% 1/4W
R215	1-247-838-00	CARBON	2K 5% 1/4W	R335	1-249-387-11	CARBON	3.3 5% 1/4W
R216	1-249-441-11	CARBON	100K 5% 1/4W	R336	1-249-387-11	CARBON	3.3 5% 1/4W
R217	1-249-431-11	CARBON	15K 5% 1/4W	R337	1-249-409-11	CARBON	220 5% 1/4W
R218	1-247-887-00	CARBON	220K 5% 1/4W	R338	1-249-423-11	CARBON	3.3K 5% 1/4W
R219	1-249-430-11	CARBON	12K 5% 1/4W	R401	1-249-411-11	CARBON	330 5% 1/4W
R220	1-249-426-11	CARBON	5.6K 5% 1/4W	R402	1-249-411-11	CARBON	330 5% 1/4W
R221	1-247-882-11	CARBON	130K 5% 1/4W	R403	1-249-411-11	CARBON	330 5% 1/4W
R223	1-249-404-00	CARBON	82 5% 1/4W	R404	1-249-411-11	CARBON	330 5% 1/4W
				R405	1-249-419-11	CARBON	1.5K 5% 1/4W
				R406	1-249-418-11	CARBON	1.2K 5% 1/4W
				R501	1-249-438-11	CARBON	56K 5% 1/4W
				R502	1-249-436-11	CARBON	39K 5% 1/4W

AUDIO

## PIN JACK

POWER SW

## **POWER SUPPLY**

SWITCH

**Note:**  
The components identified by mark  or dotted line with mark  are critical for safety.  
Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description	Remark
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### HARDWARE LIST

# 1	7-682-547-04	SCREW +BVTT 3X6 (S)
# 2	7-685-133-19	SCREW +P 2.6X6 TYPE2
# 3	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S (E)
# 4	7-685-645-79	SCREW +BVTP 3X6 TYPE2 N-S
# 5	7-621-849-00	SCREW (BV/RING)
# 6	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
# 7	7-621-775-20	SCREW +B 2.6X5
# 8	7-685-103-19	SCREW +P 2.2X5 TYPE2 NON-SLIT
# 9	7-623-921-01	RING, RETAINING, CAPSTAN
#11	7-623-505-01	LUG, 2

SCREW +BVTT 3X6 (S) : 1  
 SCREW +P 2.6X6 TYPE2 : 1  
 SCREW +BTP 2.6X8 TYPE2 N-S (E) : 1  
 SCREW +BVTP 3X6 TYPE2 N-S : 1  
 SCREW (BV/RING) : 1  
 SCREW +BVTP 3X8 TYPE2 N-S : 1  
 SCREW +B 2.6X5 : 1  
 SCREW +P 2.2X5 TYPE2 NON-SLIT : 1  
 RING, RETAINING, CAPSTAN : 1  
 LUG, 2 : 1

SCREW +BVTT 3X6 (S) : 1  
 SCREW +P 2.6X6 TYPE2 : 1  
 SCREW +BTP 2.6X8 TYPE2 N-S (E) : 1  
 SCREW +BVTP 3X6 TYPE2 N-S : 1  
 SCREW (BV/RING) : 1  
 SCREW +BVTP 3X8 TYPE2 N-S : 1  
 SCREW +B 2.6X5 : 1  
 SCREW +P 2.2X5 TYPE2 NON-SLIT : 1  
 RING, RETAINING, CAPSTAN : 1  
 LUG, 2 : 1

SCREW +BVTT 3X6 (S) : 1  
 SCREW +P 2.6X6 TYPE2 : 1  
 SCREW +BTP 2.6X8 TYPE2 N-S (E) : 1  
 SCREW +BVTP 3X6 TYPE2 N-S : 1  
 SCREW (BV/RING) : 1  
 SCREW +BVTP 3X8 TYPE2 N-S : 1  
 SCREW +B 2.6X5 : 1  
 SCREW +P 2.2X5 TYPE2 NON-SLIT : 1  
 RING, RETAINING, CAPSTAN : 1  
 LUG, 2 : 1